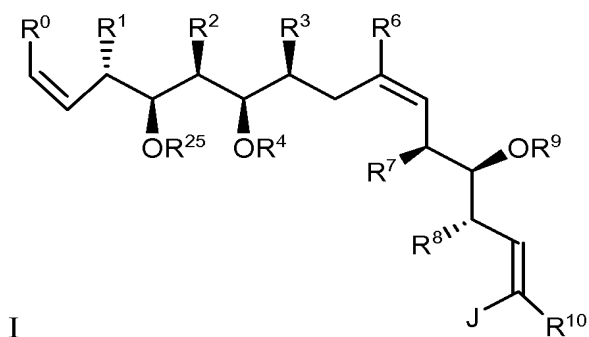


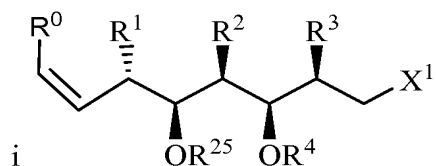
This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

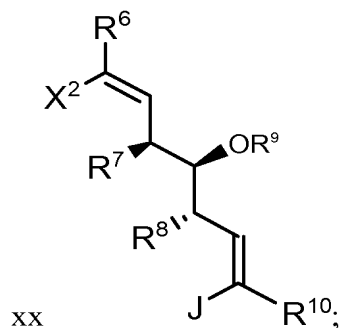
1. (Currently Amended) A process for synthesizing a compound of formula I



comprising contacting a compound of formula i



with a compound of formula xx



in the presence of a catalytically effective amount of a cross-coupling metal catalyst;

wherein

R^0 is C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, $(CH_2)_r(C_{3-6}$ cycloalkyl), $(CH_2)_r$ (aryl) or $(CH_2)_r$ (heterocycle), wherein r is 0, 1, 2, 3, or 4;

R^1 , R^2 , and R^3 , ~~R^6 , R^7 , and R^8~~ are, independently, H or C_1 - C_{10} alkyl;

R^6 , R^7 , and R^8 are, independently, C_1 - C_{10} alkyl;

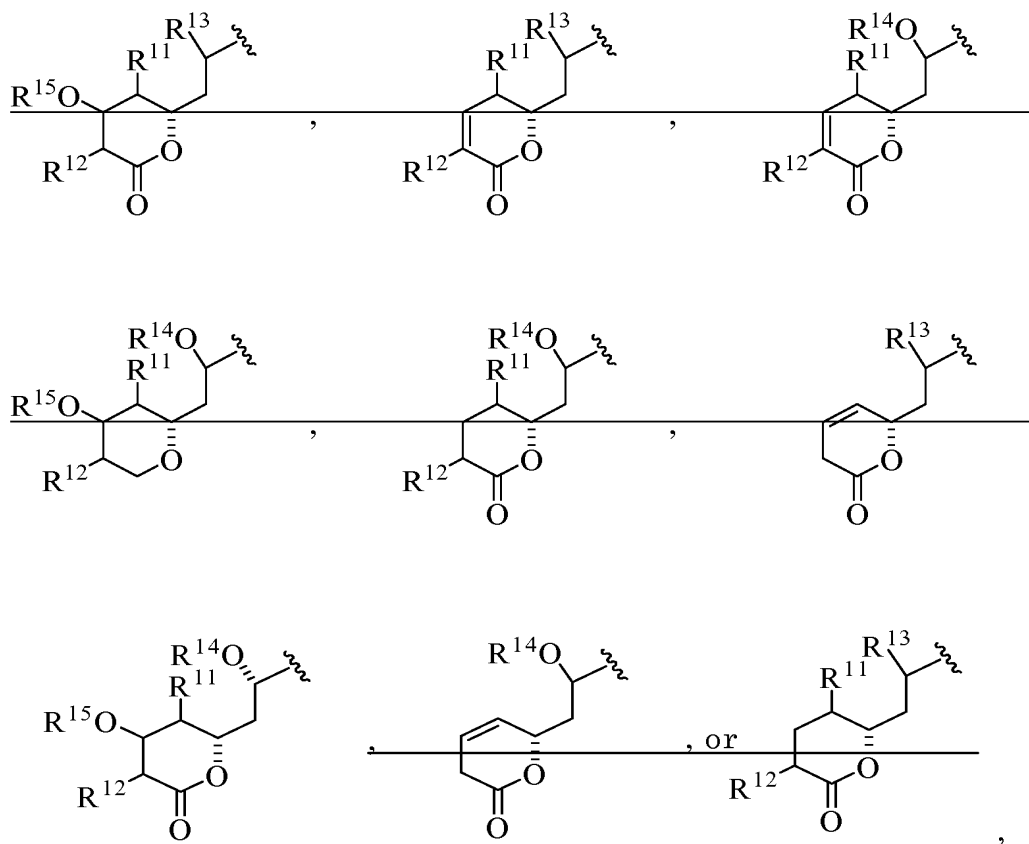
R^4 and R^9 are, independently, H or an acid labile hydroxyl protecting group;

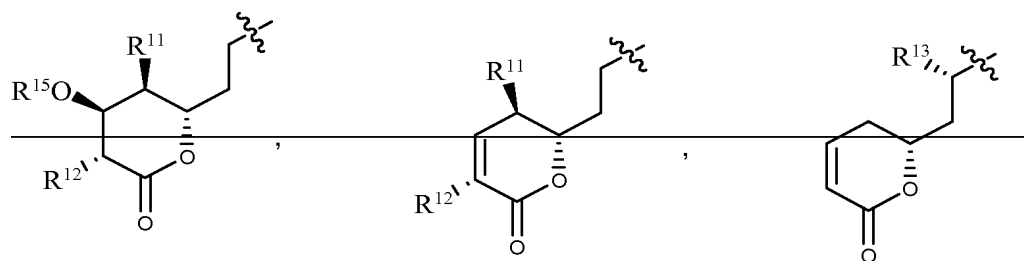
R^{10} is hydrogen ~~or C_4 - C_6 alkyl;~~

R^{25} is hydrogen or an oxidation labile hydroxyl protecting group;

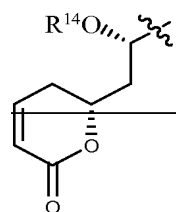
X^1 and X^2 areis, independently, a halogen, ~~triflate, tosylate, or mesylate;~~ and

J is





or



; wherein

R^{11} [,] and R^{12} and R^{13} are each independently H or C_1 - C_{10} alkyl; and

R^{14} and R^{15} are, independently, H or an acid labile hydroxyl protecting group.

2. (Canceled)

3. (Currently Amended) The process of claim 1 [[2]], wherein the cross-coupling metal catalyst comprises nickel or palladium.

4. (Currently Amended) The process of claim 1 [[2]], wherein the cross-coupling metal catalyst is Pd(0).

5. (Currently Amended) The process of claim 1 [[2]], further comprising contacting the compound of formula i with a metallating agent, wherein the metallating agent is a compound containing boron, zinc, tin, magnesium, or aluminum, or a combination thereof.

6. (original) The process of claim 5, wherein the metallating agent is a compound containing boron.

7. (original) The process of claim 5, wherein the metallating agent is MeO-9-BBN.

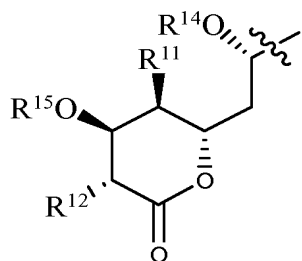
8. (original) The process of claim 5, wherein the metallating agent is a compound containing zinc.
9. (original) The process of claim 5, wherein the metallating agent is ZnCl_2 .
10. (Currently Amended) The process of claim 1, wherein ~~at least one of~~ X^1 and X^2 are iodo.
11. (original) The process of claim 1, wherein R^0 is ethylenyl.
12. (Currently Amended) The process of claim 1, wherein R^1 , R^2 , R^3 , R^6 , R^7 , and R^8 are, independently, ~~H or~~ $\text{C}_1\text{-C}_3$ alkyl.
13. (original) The process of claim 1, wherein R^1 , R^2 , R^3 , R^6 , R^7 , and R^8 are CH_3 .
14. (original) The process of claim 1, wherein R^4 and R^9 , independently, are *tert*-butyldimethylsilyl, triethylsilyl, methoxymethyl, methylthiomethyl, 2-methoxyethoxymethyl, acetyl, benzyloxymethyl, 2-(trimethylsilyl)ethoxymethyl or allyl.
15. (original) The process of claim 1, wherein R^4 is *tert*-butyldimethylsilyl.
16. (original) The process of claim 1, wherein R^9 is methoxymethyl.
17. (original) The process of claim 1, wherein R^{10} is CH_3 .
18. (original) The process of claim 1, wherein R^{11} , R^{12} and R^{13} are CH_3 .
19. (original) The process of claim 1, wherein R^{14} and R^{15} are, independently, *tert*-butyldimethylsilyl, triethylsilyl, methoxymethyl, methylthiomethyl, 2-methoxyethoxymethyl, acetyl, benzyloxymethyl, 2-(trimethylsilyl)ethoxymethyl or allyl.
20. (original) The process of claim 1, wherein R^{14} and R^{15} are, independently, *tert*-butyldimethylsilyl or methoxymethyl.

21. (original) The process of claim 1, wherein R^{25} is *para*-methoxybenzyl.

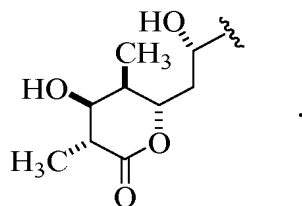
22. (Canceled)

23. (Canceled)

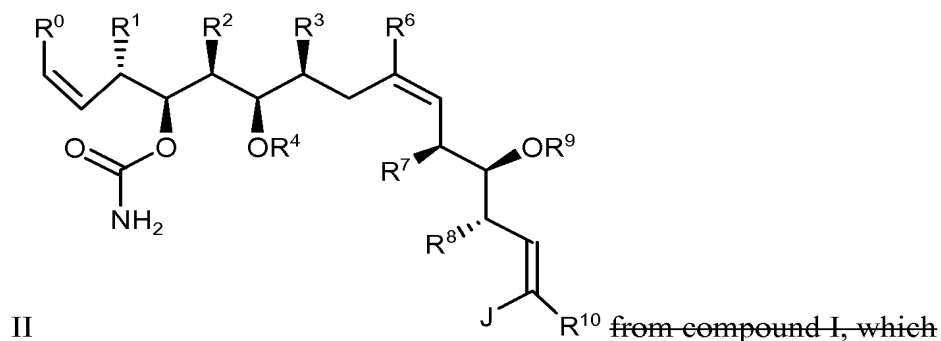
24. (original) The process of claim 1, wherein J is



25. (original) The process of claim 1, wherein J is



26. (Currently Amended) The process of claim 1, further comprising a step of synthesizing a compound of formula II



comprises comprising

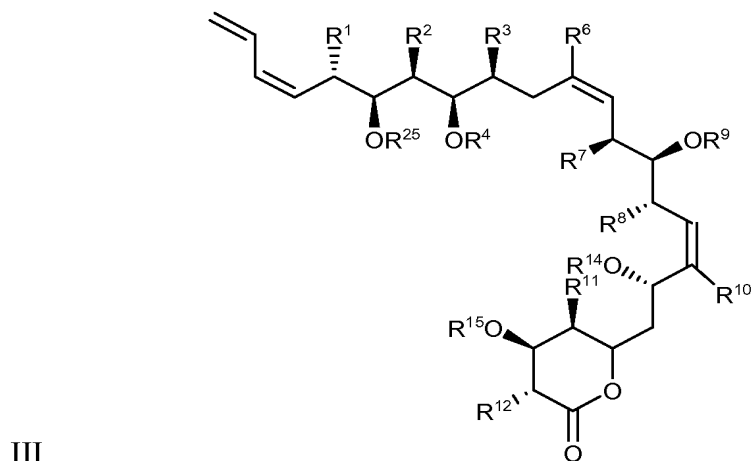
contacting the compound of formula I with an oxidizing agent to form a
deprotected compound, and

contacting the deprotected compound with Cl_3CCONCO and hydrolyzing the
resultant imide to form the compound of formula II ~~in the presence of a~~
~~hydrolyzing agent.~~

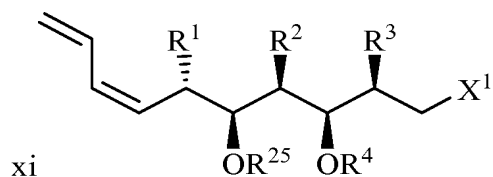
27. (original) The process of claim 26, wherein the oxidizing agent is 2,3-dichloro-5,6-dicyano-1,4-benzoquinone.

28. (Currently Amended) The process of claim 26, wherein the hydrolysis of the
imide is carried out in the presence of ~~hydrolyzing agent is~~ Al_2O_3 .

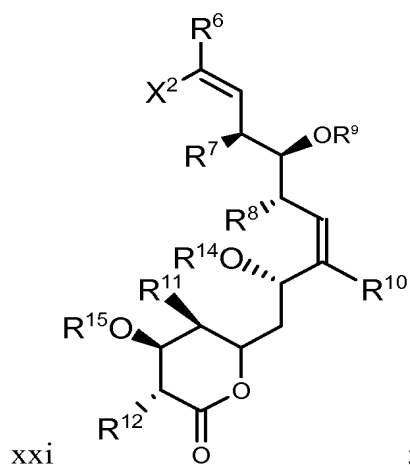
29. (Withdrawn) A process for synthesizing a compound of formula III



comprising contacting a diene of formula xi



with a lactone of formula xxi



wherein R^1 , R^2 , R^3 , R^6 , R^7 , R^8 , R^{11} , and R^{12} are, independently, H or C_1 - C_{10} alkyl;

R^4 , R^9 , R^{14} , and R^{15} are, independently, an acid labile hydroxyl protecting group;

R^{10} is hydrogen or C_1 - C_6 alkyl;

R^{25} is hydrogen or an oxidation stable hydroxyl protecting group; and

X^1 and X^2 are, independently, a halogen, triflate, tosylate, or mesylate.

30. (Withdrawn) The process of claim 29, further comprising

subjecting the process to the presence of a catalytically effective amount of a cross-coupling metal catalyst.

31. (Withdrawn) The process of claim 29, wherein the cross-coupling metal catalyst comprises nickel or palladium.

32. (Withdrawn) The process of claim 29, wherein the cross-coupling metal catalyst is Pd(0).

33. (Withdrawn) The process of claim 29, further comprising contacting the compound of formula xi with a metallating agent, wherein the metallating agent is a compound containing boron, zinc, tin or magnesium or aluminum.

34. (Withdrawn) The process of claim 33, wherein the metallating agent is a compound containing boron.

35. (Withdrawn) The process of claim 33, wherein the metallating agent is MeO-9-BBN.

36. (Withdrawn/Previously Presented) The process of claim 33, wherein the metallating agent is a compound containing zinc.

37. (Withdrawn) The process of claim 33, wherein the metallating agent is ZnCl₂.

38. (Withdrawn) The process of claim 29, wherein at least one of X¹ and X² are iodine.

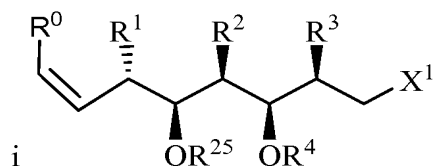
39. (Withdrawn) The process of claim 29, wherein R¹, R², R³, R⁶, R⁷, R⁸, R¹¹, and R¹² are methyl.

40. (Withdrawn) The process of claim 29, wherein R⁴, R⁹, R¹⁴, and R¹⁵ are, independently, *tert*-butyldimethylsilyl or methoxymethyl.

41. (Withdrawn) The process of claim 29, wherein R¹⁰ is hydrogen.

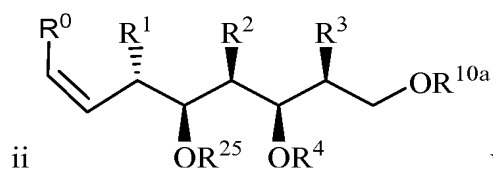
42. (Withdrawn) The process of claim 29, wherein R²⁵ is *para*-methoxy benzyl.

43. (Withdrawn) A process for synthesizing a halogenated alkylene of formula i



comprising:

contacting an alkenyl of formula ii



with a mild acid; and

adding to the process (X¹)₂ in the presence of P(R¹⁸)₃; wherein:

R⁰ is C₁₋₆ alkyl, C₂₋₆ alkenyl, C₂₋₆ alkynyl, (CH₂)_r(C₃₋₆ cycloalkyl), (CH₂)_r(aryl)

or (CH₂)_r(heterocycle), wherein r is 0, 1, 2, 3, or 4;

R¹, R², and R³ are, independently, H or C₁-C₁₀ alkyl;

R⁴ is H or an acid labile hydroxyl protecting group;

R^{10a} is a hydroxyl protecting group;

R¹⁸ is C₆-C₁₄ aryl;

R²⁵ is hydrogen or an oxidatively labile hydroxyl protecting group; and

X¹ is a halogen, triflate, tosylate, or mesylate.

44. (Withdrawn) The process of claim 43 wherein R⁰ is ethylene.

45. (Withdrawn) The process of claim 43 wherein R¹, R² and R³ are each methyl.

46. (Withdrawn) The process of claim 43 wherein R⁴ is *para*-methoxybenzyl.

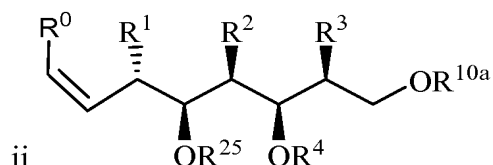
47. (Withdrawn) The process of claim 43 wherein R¹⁸ is phenyl.

48. (Withdrawn) The process of claim 43 wherein R²⁵ is *tert*-butyldimethylsilyl.

49. (Withdrawn) The process of claim 43 wherein X¹ is iodo.

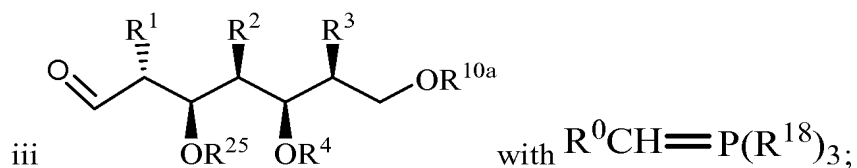
50. (Withdrawn) The process of claim 43, wherein R^{10a} is trityl.

51. (Withdrawn) A process of synthesizing a compound of formula ii



comprising:

contacting an aldehyde of formula iii



wherein

R^0 is C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, $(CH_2)_r(C_{3-6}$ cycloalkyl), $(CH_2)_r$ (aryl) or $(CH_2)_r$ (heterocycle), wherein r is 0, 1, 2, 3, or 4;

R^1 , R^2 , and R^3 are, independently, H or C_1 - C_{10} alkyl;

R^4 is H or an acid labile hydroxyl protecting group;

R^{10a} is a hydroxyl protecting group;

R^{18} is C_6 - C_{14} aryl; and

R^{25} is hydrogen or an oxidatively labile hydroxyl protecting group.

52. (Withdrawn) The process of claim 51 wherein R^0 is ethylene.

53. (Withdrawn) The process of claim 51 wherein R^1 , R^2 and R^3 are each methyl.

54. (Withdrawn) The process of claim 51 wherein R^4 is *para*-methoxybenzyl.

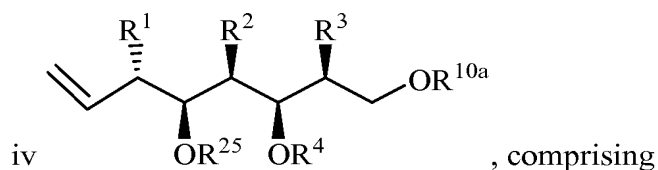
55. (Withdrawn) The process of claim 51 wherein R^{18} is phenyl.

56. (Withdrawn) The process of claim 51 wherein R^{25} is *tert*-butyldimethylsilyl.

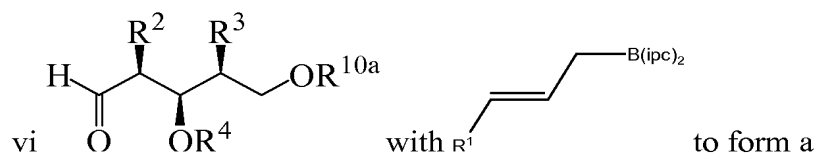
57. (Withdrawn) The process of claim 51, wherein R^{10a} is trityl.

58. (Withdrawn) The process of claim 52, wherein the compound of formula iii is contacted with allyldiphenylphosphine instead of $R^0CH=P(R^{18})_3$.

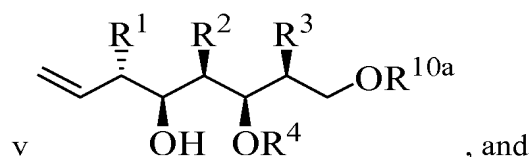
59. (Withdrawn) A process of synthesizing a compound of formula iv



contacting a compound of formula vi



compound of formula v



reacting a compound of formula v with $R^{25}-O-C(=NH)-CCl_3$, wherein

R^1 , R^2 , and R^3 are, independently, H or C_1 - C_{10} alkyl;

R^4 is H or an acid labile hydroxyl protecting group;

R^{10a} is a hydroxyl protecting group; and

R^{25} is hydrogen or an oxidatively labile hydroxyl protecting group.

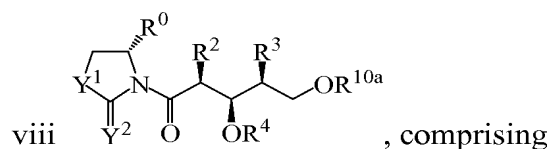
60. (Withdrawn) The process of claim 59 wherein R^1 , R^2 and R^3 are each methyl.

61. (Withdrawn) The process of claim 59 wherein R^4 is *para*-methoxybenzyl.

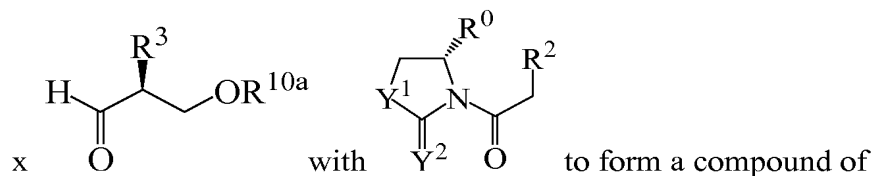
62. (Withdrawn) The process of claim 59 wherein R^{25} is *tert*-butyldimethylsilyl.

63. (Withdrawn) The process of claim 59, wherein R^{10a} is trityl.

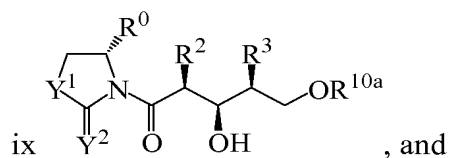
64. (Withdrawn) A process of forming a compound of formula viii



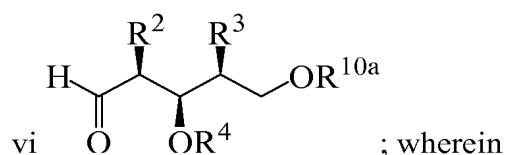
contacting a compound of formula x



formula



converting the compound of formula ix to a compound of formula vi



R^0 is C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, $(CH_2)_r(C_{3-6}$ cycloalkyl),

$(CH_2)_r(aryl)$ or $(CH_2)_r(heterocycle)$, wherein r is 0, 1, 2, 3, or 4;

R^2 and R^3 are, independently, H or C_1-C_{10} alkyl;

R^4 is H or an acid labile hydroxyl protecting group;

R^{10a} is a hydroxyl protecting group; and

Y^1 and Y^2 are, independently, O or S.

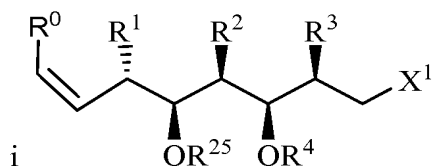
65. (Withdrawn) The process of claim 64 wherein R^0 is benzyl.

66. (Withdrawn) The process of claim 64 wherein R^2 and R^3 are each methyl.

67. (Withdrawn) The process of claim 64 wherein R^4 is *para*-methoxybenzyl.

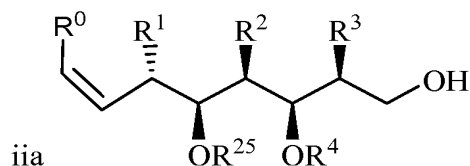
68. (Withdrawn) The process of claim 64 wherein R^{10a} is trityl.

69. (Withdrawn) A process for synthesizing a halogenated alkylene of formula i



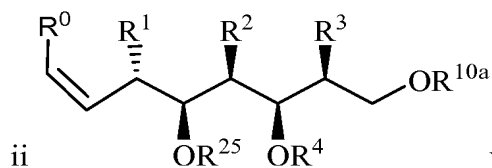
comprising,

contacting an alcohol of formula iia



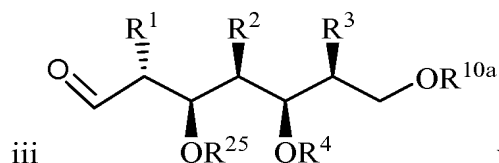
with $(X^1)_2$ in the presence of $P(R^{18})_3$;

yielding the compound of formula iia by contacting an alkylene of formula ii



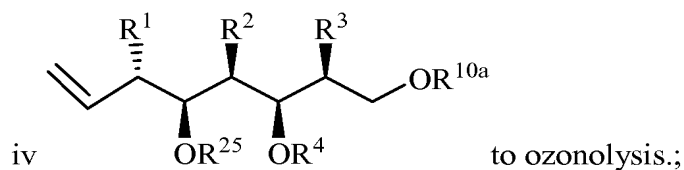
with a mild acid;

forming the compound of formula ii by contacting an aldehyde of formula iii

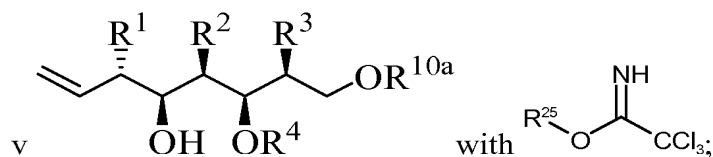


with $R^0CH_2-P(R^{18})_3X^1$;

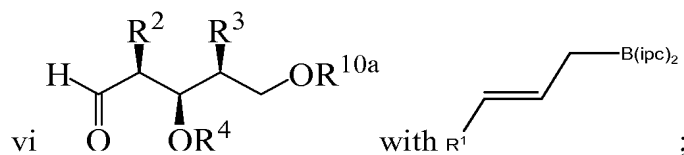
producing the compound of formula iii by subjecting a compound of formula iv



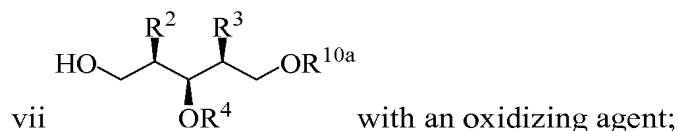
resulting in the compound of formula iv by contacting a compound of formula v



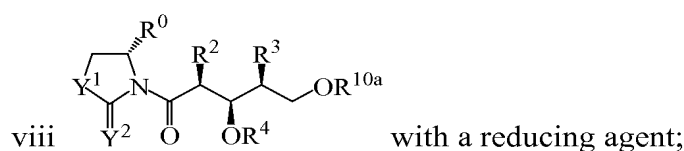
synthesizing the compound of formula v by contacting a compound of formula vi



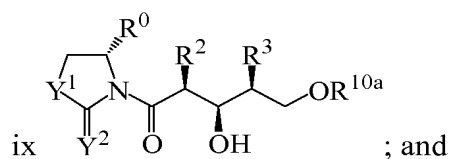
producing the compound of formula vi by contacting a compound of formula vii



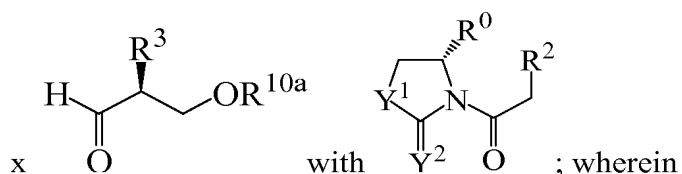
forming the compound of formula vii by contacting a compound of formula viii



synthesizing the compounds of formula viii and by protecting a hydroxyl moiety of a compound of formula ix



yielding the compounds of formula ix and ix' by contacting a compound of formula x



R^0 is C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, $(\text{CH}_2)_r(\text{C}_{3-6} \text{ cycloalkyl})$, $(\text{CH}_2)_r(\text{aryl})$ or $(\text{CH}_2)_r(\text{heterocycle})$, wherein r is 0, 1, 2, 3, or 4;

R^1 , R^2 , and R^3 are, independently, H or $\text{C}_1\text{-C}_{10}$ alkyl;

R^4 is H or an acid labile hydroxyl protecting group;

R^{10a} is a hydroxyl protecting group;

R^{18} is $\text{C}_6\text{-C}_{14}$ aryl;

R^{25} is hydrogen or an oxidatively labile hydroxyl protecting group;

X^1 is a halogen, triflate, tosylate, or mesylate; and

Y^1 and Y^2 are, independently, S or O.

70. (Withdrawn) The process of claim 69 wherein R^0 is benzyl.

71. (Withdrawn) The process of claim 69 wherein R^1 , R^2 and R^3 are each methyl.

72. (Withdrawn) The process of claim 69 wherein R^4 is *para*-methoxybenzyl.

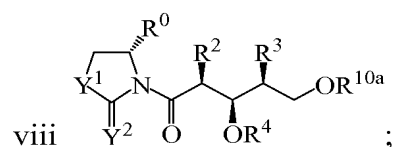
73. (Withdrawn) The process of claim 69 wherein R^{18} is phenyl.

74. (Withdrawn) The process of claim 69 wherein R^{25} is *tert*-butyldimethylsilyl.

75. (Withdrawn) The process of claim 69 wherein X^1 is iodo.

76. (Withdrawn) The process of claim 69, wherein R^{10a} is trityl.

77. (Withdrawn) A compound of formula viii



wherein

R^0 is C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, $(CH_2)_r(C_{3-6}$ cycloalkyl), $(CH_2)_r$ (aryl)

or $(CH_2)_r$ (heterocycle), wherein r is 0, 1, 2, 3, or 4;

R^2 and R^3 are, independently, H or C_1 - C_{10} alkyl;

R^4 is H or an acid labile hydroxyl protecting group;

R^{10a} is a hydroxyl protecting group; and

Y^1 and Y^2 are, independently, S or O.

78. (Withdrawn) The compound of claim 77 wherein R^0 is benzyl.

79. (Withdrawn) The compound of claim 77 wherein R^2 and R^3 are each methyl.

80. (Withdrawn) The compound of claim 77 wherein R^4 is *para*-methoxybenzyl.

81. (Withdrawn) The compound of claim 77 wherein R^{10a} is trityl.

82. (Withdrawn) The compound of claim 77 wherein at least one of Y^1 and Y^2 is S.

83. (Withdrawn) The compound of claim 77 wherein at least one of Y^1 and Y^2 is O.